From:	Berg, Marlene
To:	Tzhone, Stephen
Subject:	FW: dioxin gw question; RE: colloid vs suspended solids (turbidity) - role in facilitated dioxin transport
Date:	Tuesday, December 15, 2015 3:58:08 PM
Attachments:	Arkwood_GW_discussion_10Dec2015.docx
Importance:	High

Steve,
I am very sorry I failed to tell you when you set up the call that Dave Bartenfelder is out on sick leave. He had surgery but is now recovering nicely.

I wasn't sure what your timing is….in all probability Dave will be out until after the first of the year.
Marlene

From: Tzhone, Stephen
Sent: Monday, December 14, 2015 4:24 PM
To: Berg, Marlene <Berg.Marlene@epa.gov>; Bartenfelder, David <Bartenfelder.David@epa.gov>; Crumbling, Deana <Crumbling.Deana@epa.gov>; Anderson, RobinM <Anderson.RobinM@epa.gov>
Cc: Sanchez, Carlos <sanchez.carlos@epa.gov>; Meyer, John <Meyer.John@epa.gov>
Subject: dioxin gw question; RE: colloid vs suspended solids (turbidity) - role in facilitated dioxin transport
Importance: High

Hi Marlene, Dave,

EPA R6 and ADEQ had a dioxin gw call with McKesson and there were some questions. Can you give some clarification on these items below? The call notes are attached for reference as well.

Thanks,

Stephen L. Tzhone
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From: Huling, Scott
Sent: Thursday, December 10, 2015 4:09 PM
To: Tzhone, Stephen
Subject: colloid vs suspended solids (turbidity) - role in facilitated dioxin transport

Stephen,

Here is the summary you requested. Hopefully I captured the three issues that pertained to this discussion.

The issue of colloids versus suspended solids and the role they play in the facilitated transport of

dioxin and exposure pathways came up during the Arkwood SF site conference call. The three issues below pertain to the fact that the acceptance criteria for dioxin is “30 parts per quadrillion” and any error in sampling could exceed this very low level. Clarification on these matters are requested.

1. One issue involved whether there was a size dependent aspect of the facilitated transport of dioxin. Specifically, does the regulatory concern involve dioxin transport on colloids, which is defined as a specific range in particle size (i.e., 10-10,000 angstroms). Or does the regulatory requirement involve a broader range in particle size such as suspended solids (i.e., clay, silt, detritus, etc.) and other particles. These particles of varying size may be contaminated with dioxin could be derived from the subsurface system and emerge at springs and seeps. The interpretation inferred by the responsible parties is that regulatory concerns are restricted to colloidal transport of dioxin.

2. Another issue pertained to whether the ground water sample could be differentiated between colloids and “non-colloids”. Filtration was raised as a possible means to achieve this distinction. Preliminary input on this matter was that this would introduce uncertainty as it would physically remove colloids and other solid materials from the ground water sample without a clear distinction between colloids and “non-colloids”. The conventional wisdom is that filtration would remove solid matter of any size that is potentially contaminated with dioxin and consequently would negatively impact the quality of the sample.

3. The third issue involved whether the ground water sample collected at the spring, seep, etc. could possibly involve suspended materials (i.e., suspended solids) and could reflect an artifact of the sampling process (i.e., disturb the soil/sediment at the sampling location). General input was provided on this matter indicating that discretion should be exercised when collecting the sample so as not to acquire a sample that includes disturbed/suspended soil/sediment material. It was reported that this could be difficult when collecting a sample at a seep where there is not a clear portion of the water body to collect a sample.

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